



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,696	02/13/2002	Nilesh Shah	20949P-000200US	1454
48102	7590	05/19/2006	EXAMINER	
NETWORK APPLIANCE/BLAKELY 12400 WILSHIRE BLVD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			BURGESS, BARBARA N	
			ART UNIT	PAPER NUMBER
			2157	

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/077,696	<b>Applicant(s)</b> SHAH ET AL.	
	<b>Examiner</b> Barbara N. Burgess	<b>Art Unit</b> 2157	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This Office Action is in response to amendment filed February 16, 2006. Claims 1-19 are presented for further examination.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-13, 15-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Blumenau et al. (hereinafter "Blum", US Patent No. 6,421,711 B1).

As per claim 1, Blum discloses a storage server in a storage area network connecting a plurality of host computers and a plurality of storage devices, said storage server comprising:

- A plurality of storage processors associated with said plurality of host computers and said plurality of storage devices, wherein said plurality of storage processors receives a plurality of command packets and a plurality of data packets (column 6, lines 65-67, column 7, lines 1-9, column 9, lines 36-56);
- A switching circuit connecting said plurality of storage processors (column 8, lines 3-15, 46-50, 58-65, column 9, lines 44-55, column 10, lines 1-15);

Art Unit: 2157

- A micro engine, wherein said micro engine is configured to execute processing comprising:

configuring a path between a first storage processor and a second storage processor of said plurality of storage processors, via said switching circuit, in accordance with a command packet of said plurality of command packets (column 9, lines 20-55, column 11, lines 56-65, column 12, lines 12-30, column 13, lines 45-57).

routing a data packet of said plurality of data packets over said path, prior to completely receiving said data packet, between said first storage processor and said second storage processor via said switching circuit (column 10, lines 10-16, 52-60, column 39, lines 34-55, column 40, lines 21-40, column 41, lines 35-65).

As per claim 2, Blum discloses the storage server of claim 1, wherein said first storage processor includes a lookup table that associates one or more virtual logical unit numbers (VLUNs) with one or more physical logical unit numbers (PLUNs), wherein said one or more PLUNs are associated with said plurality of storage devices, and wherein said one or more VLUNs are visualizations of said one or more PLUNs (column 25, lines 32-50, 54-67).

As per claim 3, Blum discloses the storage server of claim 1, wherein said micro engine is a component of one of said plurality of storage processors (column 17, lines 9-35).

As per claim 4, Blum discloses the storage server of claim 1, further comprising:

- A plurality of micro engines, wherein said plurality of micro engines are components of said plurality of storage processors (column 17, lines 9-35).

As per claim 5, Blum discloses the storage server of claim 1, wherein said plurality of data packets are received from one of said plurality of host computers (column 7, lines 21-25).

As per claim 6, Blum discloses the storage server of claim 1, wherein said plurality of data packets are received from one of said plurality of storage devices (column 7, lines 28-35).

As per claim 7, Blum discloses the storage server of claim 1, wherein said plurality of data packets are received from more than one of said plurality of storage devices (column 7, lines 25-40).

As per claim 8, Blum discloses the storage server of claim 1, wherein said plurality of data packets are routed to one of said plurality of host computers (column 8, lines 63-67).

As per claim 9, Blum discloses the storage server of claim 1, wherein said plurality of data packets are routed to one of said plurality of storage devices (column 7, lines 28-35).

As per claim 10, Blum discloses the storage server of claim 1, wherein said plurality of data packets are routed to more than one of said plurality of storage devices (column 3, lines 63-67, column 4, lines 25-35, column 5, lines 63-67, column 6, lines 3-8).

As per claim 11, Blum discloses the storage server of claim 1, wherein said micro engine is further configured to execute processing comprising:

- Configuring a plurality of paths in accordance with said command packet (column 13, lines 40-57).

As per claim 12, Blum discloses the storage server of claim 1, wherein said first storage processor receives said command packet from one of said plurality of host computers (column 9, lines 43-55).

As per claim 13, Blum discloses the storage server of claim 1, wherein said first storage processor receives said command packet from one of said plurality of storage processors (column 10, lines 34-40).

As per claim 15, Blum discloses the storage server of claim 1, wherein said first storage processor passes a handle to said second storage processor (column 10, lines 35-45).

As per claim 16, Blum discloses the storage server of claim 1, wherein said first storage processor and said second storage processor are a single storage processor (column 7, lines 23-27).

As per claim 17, Blum discloses the storage server of claim 1, wherein said micro engine routes said data packet according to a routing tag therein (column 13, lines 40-50)

As per claim 18, Blum discloses the storage server of claim 1, further comprising:

- A virtual server controller configured to program, via a configuration command, a lookup table in one of said plurality of storage processors, wherein said lookup table associates one or more virtual logical unit numbers (VLUNs) with one or more physical logical unit numbers (PLUNs) (column 25, lines 32-50, 54-67).

As per claim 19, Blum discloses a method of routing data in a storage area network connecting a storage server between a plurality of host computers and a plurality of storage devices, said storage server having a plurality of storage processors and a

Art Unit: 2157

switching circuit, said plurality of storage processors receiving a plurality of command packets and a plurality of data packets, said method comprising:

- Configuring a path between a first storage processor and a second storage processor of said plurality of storage processors, via said switching circuit, in accordance with a command packet of said plurality of command packets (column 9, lines 20-55, column 11, lines 56-65, column 12, lines 12-30, column 13, lines 45-57);
- Routing a data packet of said plurality of data packets over said path, prior to completely receiving said data packet, between said first storage processor and said second storage processor via said switching circuit (column 10, lines 10-16, 52-60, column 39, lines 34-55, column 40, lines 21-40, column 41, lines 35-65).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau et al. (hereinafter "Blum", US Patent No. 6,421,711 B1) in view of Karpoff et al. (hereinafter "Karpoff", US Patent Publication 2002/0112113 A1).

As per claim 14, Blum discloses the storage server of claim 1.



Blum does not explicitly disclose wherein said micro engine uses a command handle in said command packet to perform a tree search to configure said path.

However, in an analogous art, Karpoff discloses a mapping structure for medium sized disk images called a B-Tree structure.

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Karpoff's tree search in Blum's storage server in order to maintain data allowing translation of virtual block addresses to real block addresses.

### ***Response to Arguments***

#### **Office notes the following arguments:**

- (a) The switch disclosed in Blum connects physical ports to virtual ports, instead of connecting a plurality of storage processors such as recited in claim 1.
- (b) Blum and Bass are of different technology areas. Therefore, one of ordinary skill in the art would not think to try to combine the teachings of Blum and Bass.

#### **In response to:**

- (a) Blum discloses that the links connecting the storage devices and storage adaptors are Fibre Channel fiber-optic loops. Each of the loops can be replaced with a switch or use switches together with loops for connecting devices. A fabric is a topology that permits multiple transmissions between nodes connected to it. The fabric routes or switches data frames from source to destination nodes. A switch is an implementation

Art Unit: 2157

of the fabric topology. The Fibre Channel network can include one or multiple switches (column 8, lines 6-15, 46-51, 59-63, column 10, lines 1-16).

As well, ports are interfaces on a computer or node to connect devices. According to Blum a node may have a number of ports. The node can represent any device having ports, which may be connected to the network. The node maybe a storage subsystem (column 6, lines 65-67, column 7, lines 1-39, column 9, lines 22-40).

Therefore, Blum, indeed, discloses a switch connecting a plurality of storage processors.

(b) Applicant's argument has been considered but is moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara N. Burgess whose telephone number is (571) 272-3996. The examiner can normally be reached on M-F (8:00am-4:00pm).

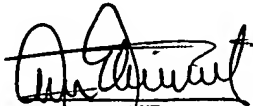
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2157

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Barbara N Burgess  
Examiner  
Art Unit 2157

May 12, 2006

  
ARIO ETIENNE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100